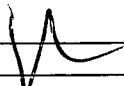
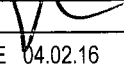


Date: Tuesday, 09/10/2007 3:15:17 PM
 User: Linda Lacelle

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: HIGH AFT X-TUBE 412
Job Number	: 35055		
Estimate Number	: 10559		
P.O. Number	: <i>N/A</i>	Part Number	: D412664203
This Issue	: 09/10/2007 S.O. No. : <i>N/A</i>	Drawing Number	: D412-664-243 REV D
Prsht Rev.	: NC	Project Number	: N/A
First Issue	: <i>N/A</i> Type : LANDING GEAR	Drawing Revision	: D
Previous Run	: 35006	Material	: <i>N/A</i>
Written By	: 	Due Date	: 30/10/2007 Qty: 1 Um: Each
Checked & Approved By	: 		
Comment	Est Rev:E 04.02.16 Reformat; Added D3189-1 K/DS Est Rev:F 06-03-29 Remove Coments on Pick List JLM Est Rev:G 06.12.08 per ECN 886 EC Est Rev:H 07-04-30 As per Rev D JLM		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

1.0	DC	DOCUMENT CONTROL
-----	----	------------------



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D412-664-203 CHG 006

E. A. L. 07/10/07

2.0	D6009129	Crosstube Material
-----	----------	--------------------



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D6009-129 Crosstube *B26548*

Check OD = 3.500"; ID = 2.250"

J.L. 07/10/10

3.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
-----	------------	----------------------------



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA166

2-Turn first side as per Folio FA166

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243.

J.L. / J.F. 07/10/12

4.0	QC1	INSPECT ALL DIM TO DIM SHEET
-----	-----	------------------------------



Comment: INSPECT ALL DIM TO DIM SHEET

J.L. / J.F. 07/10/12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 09/10/2007 3:15:17 PM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: HIGH AFT X-TUBE 412

Job Number: 35055

Part Number: D412664203

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA166

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243.

3- Remove sand and plugs

4-Scribe part # and batch # using vibrating stylus as per Dwg D412-664-243
engrave on outside of tube)

Inside of Cuff(Donot

J.F. 07/10/12

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

J.F. 07/10/12

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

PTG
07.10.21

8.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Polish entire outside surface of crosstube

JD 7-10-22

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

JD 07/10/22

10.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

JD 7-10-22

11.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: Inspect work & Chemical conversion Coat

JD 07/10/23

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: 12 Date: 07/10/18
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07-10-17	3 5	Tubes were turned slightly off center. RC: - Material not perfectly straight. - Tailstock slightly off center / Human error on set-up	UP 07.10.17 per QSI 642	Ultrasonic to measure the wall thickness along and around the tube to the dwg dimensions. Engineering to verify wall thickness dimensions. * Tube Acceptable * See attached.	UP 07.10.17 per QSI 642	UP 07-10-17	UP 07.10.17 per QSI 642	UP 07-10-17

NOTE: Date & initial all entries

Date: Tuesday, 09/10/2007 3:15:18 PM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: HIGH AFT X-TUBE 412

Job Number: 35055

Part Number: D412664203

Job Number:



Seq. #:

Machine Or Operation:

Description :

12.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg D412-664-243 using CNC bender program 412-af and Folio FT010/ EL 7-10-23

13.0

QC15

DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

7-10-24 @

14.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551

2-Ream hole to finish size in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243

SK/EL

7-10-24

JD 7-10-25

15.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

JD 7-10-25

16.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

OK 07/10/26

17.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

OK 07/10/26

18.0

OUTSIDE SERV.10

OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 038 Or

Issue P/O: 4916 LPI as per ASTM 1417

Level 2 Attach copy of NDT results to work order

C207110126 @

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 09/10/2007 3:15:18 PM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: HIGH AFT X-TUBE 412

Job Number: 35055

Part Number: D412664203

Job Number:



Seq. #: Machine Or Operation: Description :

19.0 PACKAGING 1 PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage

Ensure copy of NDT results attached to work order.

0207110130(1)

20.0 QC5 INSPECT WORK TO CURRENT STEP



Comment: Inspect for damage & ensure results are as per Dwg D412-664-203

0207110130

21.0 SPRAY PAINTING SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

0207110130

22.0 QC14 INSPECT SPRAY PAINT



Comment: Inspect Spray Paint

Wrap in plastic bag to protect from scratches

02071101

(1)

23.0 D3595 Rubber Cushion (per sq ft)



Comment: Qty.: 0.0492 sf(s)/Unit Total: 0.0492 sf(s)

Rubber Cushion (per sq ft)

.630" x5.70" x2pcs

Batch:

33835

02071105

24.0 D2856600 Abrasion Strip



Comment: Qty.: 1.7640 f(s)/Unit Total: 1.7640 f(s)

Pick:

Qty Part number Description Batch

2 D2856-600(Cut to 10.090") Abrasion Strip

25656

02071101

25.0 D28961 Support



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D2896-1

Support

30200

02071101

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 09/10/2007 3:15:18 PM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: HIGH AFT X-TUBE 412

Job Number: 35055

Part Number: D412664203

Job Number:



Seq. #:

Machine Or Operation:

Description :

26.0

D31891

Chafing Shield



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number Description Batch

2 D3189-1 Chafing Shield 30201

27.0

MS2192028

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-28 Clamp 104423

28.0

MS2192030

clamp(per MIL-DTL-8783C)



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

clamp(per MIL-DTL-8783C)

batch: M100154

M1 07 1101

29.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

Assemble as per Dwg D412-664-203

1-Install supports with magnobond as per QSI 0: here for for 12 Hrs

A/R 6398 Magnobond Batch: M104677

Expiry Date: 04/08

Time: 11:00 AM

M1 07 11 01

2-Install clamps as per Dwg D212-664-141. e clamps to 80-100 in lb.

M1 07 11 05 (1)

30.0

QC5

ECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

07 11 06

31.0

PACKAGING 1

PACKAGING RESOURCE #1



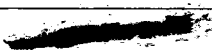
Comment: PACKAGING RESOURCE #1

Pick Packing Kit

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
								

NOTE: Date & initial all entries

Date: Tuesday, 09/10/2007 3:15:18 PM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: HIGH AFT X-TUBE 412

Job Number: 35055

Part Number: D412664203

Job Number:



Seq. #:

Machine Or Operation:

Description :

32.0

AN640A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch: M104517

AS 07/11/07

33.0

AN641A

Bolt



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Bolt

Batch: M100743

AS 07/11/07

34.0

AN960JD616

Washer



Comment: Qty.: 18.0000 Each(s)/Unit Total : 18.0000 Each(s)

Washer

Batch: M105125

AS 07/11/07

35.0

MS21042L6

Nut



Comment: Qty.: 6.0000 Each(s)/Unit Total : 6.0000 Each(s)

Nut

Batch: M104374

AS 07/11/07

36.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

AS 07/11/07

37.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D412-664-203

*****Ensure tube is not packaged if curing time is less than 12 hrs, see step 27 for application time & date

Time & date of packaging: 07/11/07 @ 1:30pm

AS 07/11/07

Location: 6

PPP Rev: 6

07/11/07 ①

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: D Date: 9/11/09
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 09/10/2007 3:15:18 PM
User: Linda Lacelle

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: HIGH AFT X-TUBE 412

Job Number: 35055

Part Number: D412664203

Job Number:



Seq. #:

Machine Or Operation:

Description :

38.0

QC21

FINAL INSPECTION/W/O RELEASE



②

Comment: FINAL INSPECTION/W/O RELEASE

22/11/09

Job Completion



u 07-10-08

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART

DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED 90	APPROVED [Signature]	DRAWING NO. D412-664-243	REV. D SHEET 1 OF 3
DATE 07.03.09		TITLE CROSSTUBE ASSEMBLY (412 HI AFT) NTS	
A	01.10.17	NEW ISSUE	
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	
C	06.10.27	REMOVE D2856-600-1087, ADD D2732-058 & MAGNOBOND 6398 MS21920-32 WAS MS21920-30	
D	07.03.09	REMOVE D2732-058, CHANGE TO D3595-063-570	

RELEASE07.04.24 **[Signature]**

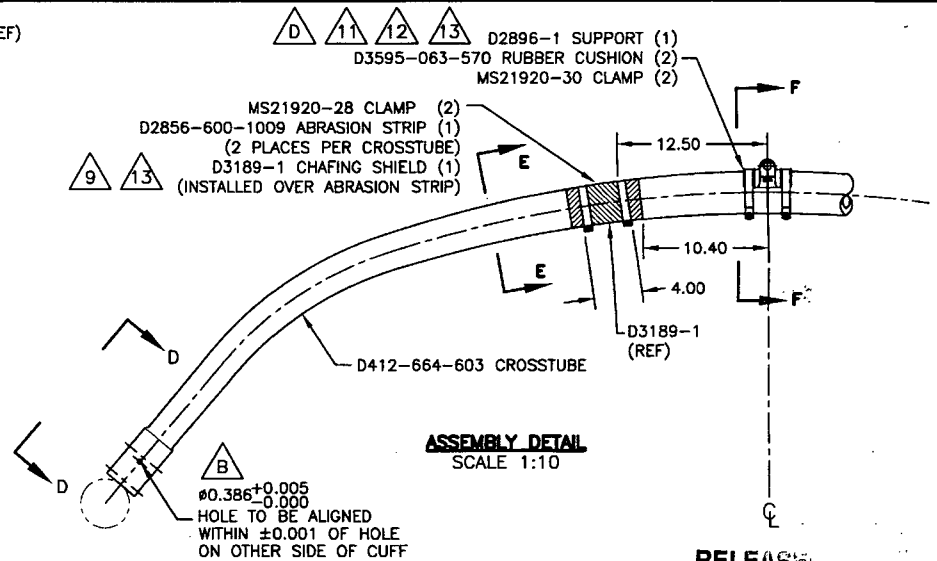
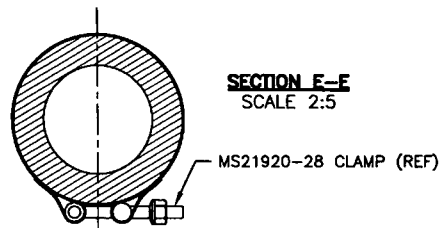
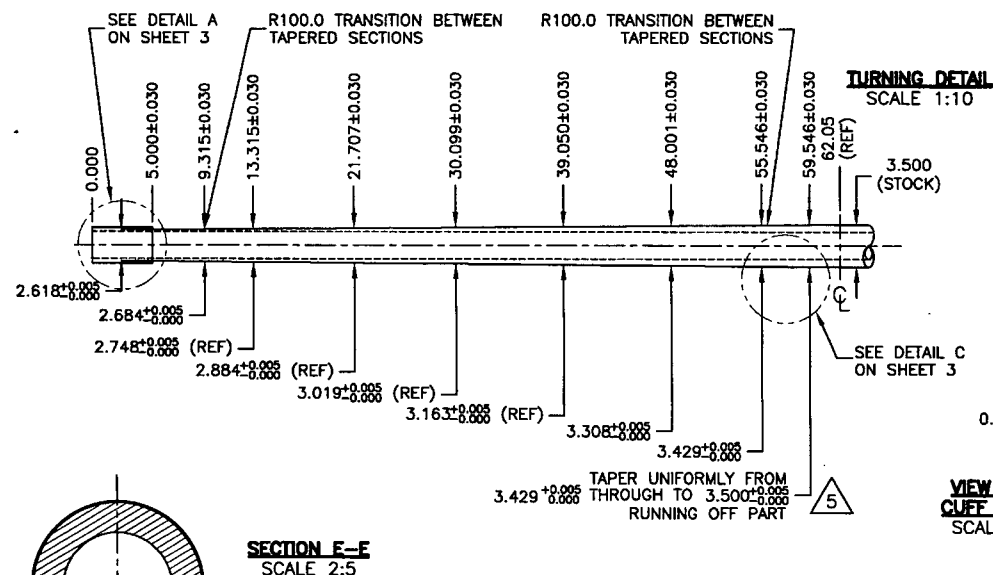
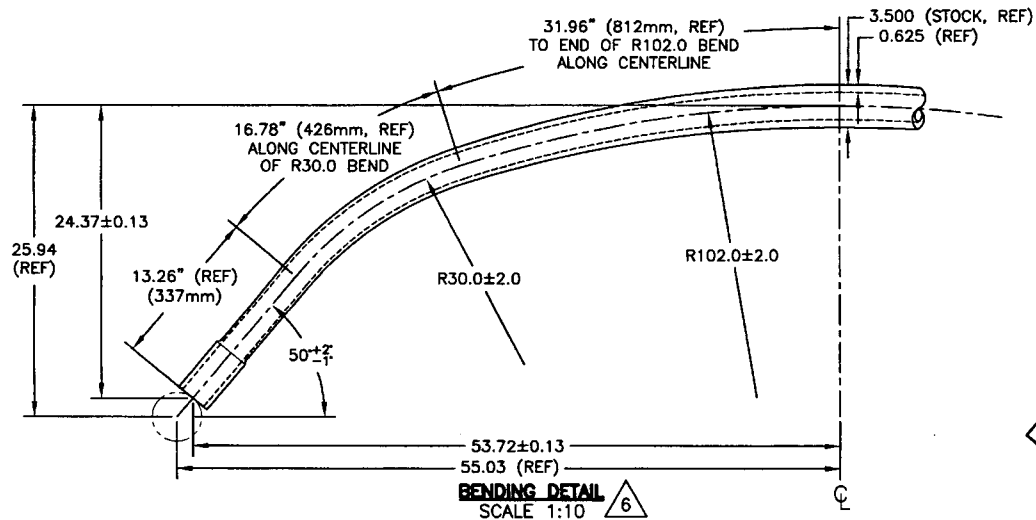
Qty	Part Number	Description
X	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)
1	D6009-129	CROSSTUBE
2	D3595-063-570	RUBBER CUSHION
1	D2896-1	SUPPORT
2	D2856-600-1009	ABRASION STRIP
4	MS21920-28	CLAMP
2	MS21920-30	CLAMP (OR MS21920-32)
2	D3189-1	CHAFING SHIELD
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6009-129
FINISHED LENGTH = 124.09±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-600-1009 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
- 13) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

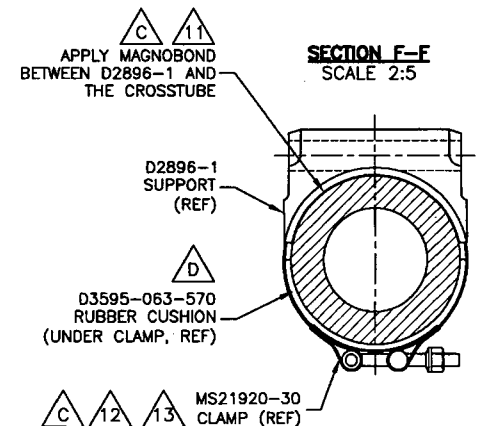
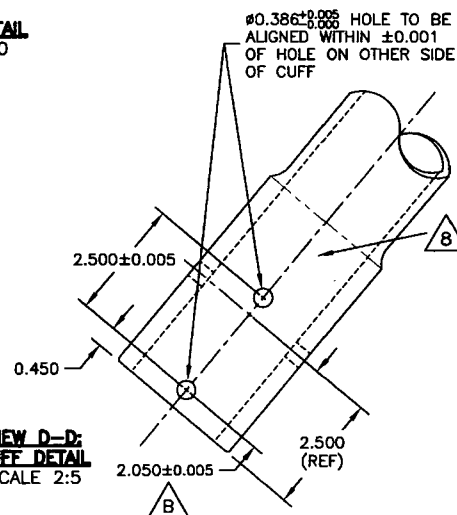
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RELEASE

07.04.24

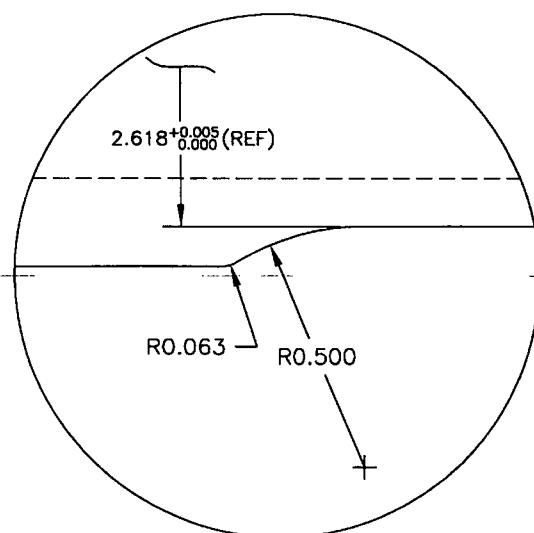
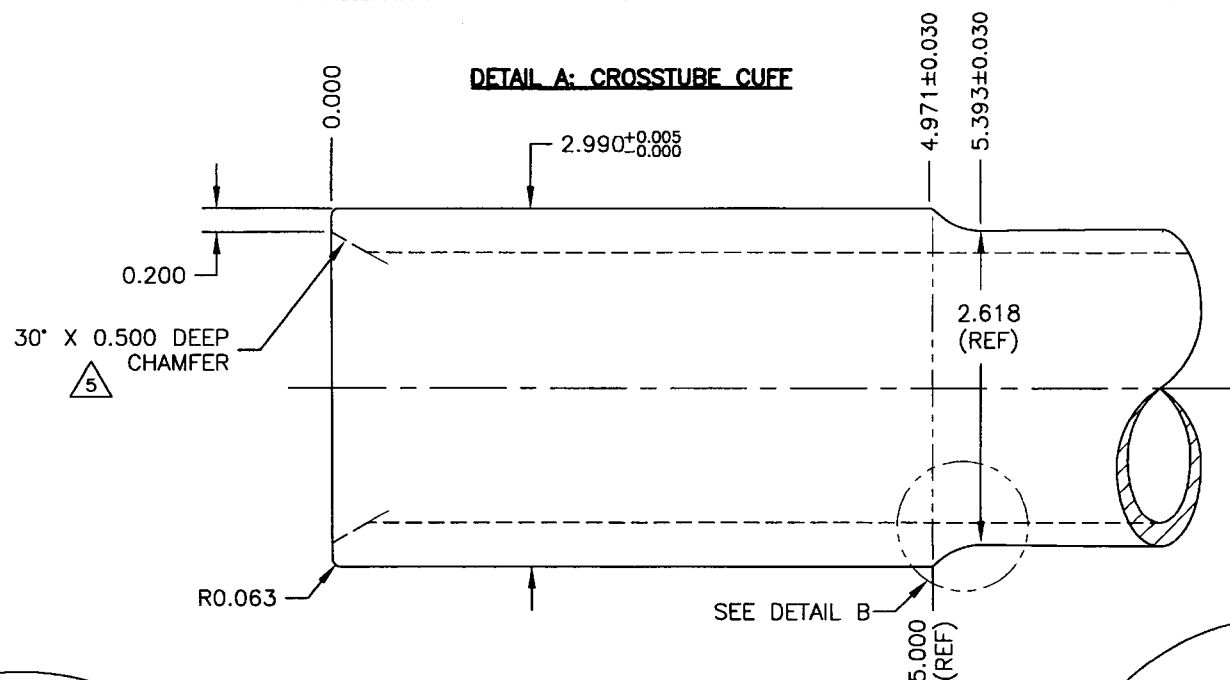


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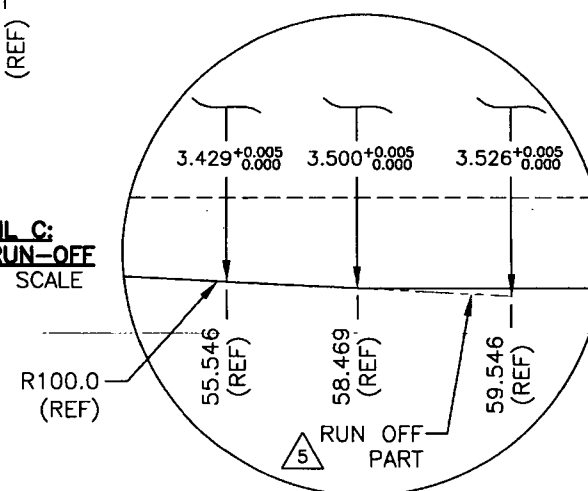
DESIGN	PH	DRAWN BY	PH	DART	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED	QP	APPROVED	PH	DRAWING NO.	REV. D
				D412-664-243	SHEET 2 OF 3
DATE	07.03.09	TITLE		CROSSTUBE ASSEMBLY (412 HI AFT)	SCALE 1:10

RELEASED
07-04-244
REF ECN 889



**DETAIL B: CUFF
TRANSITION**
SCALE 4:1

**DETAIL C:
TAPER RUN-OFF**
NOT TO SCALE



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DESIGN

PH

DRAWN BY

PH

DART

DART AEROSPACE LTD.
HAMMERSLEY, ONTARIO, CANADA

CHECKED

J

APPROVED

DRAWING NO.
D412-664-243

REV. D
SHEET 3 OF 3

DATE

07.03.09

TITLE

CROSSTUBE ASSEMBLY (412 HI AFT) 1:1

DART AEROSPACE LTD	Work Order: 35055
Description: Crosstube Assembly (412 High Aft)	Part Number: D412-664-243
Inspection Dwg: D412-664-243 Rev: B	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒
First Article
☐
Prototype

Inspection Sheet	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.684	+0.005/-0.000	2.688"	✓			
	2.748	+0.005/-0.000	2.753"	✓			
	2.884	+0.005/-0.000	2.888"	✓			
	3.019	+0.005/-0.000	3.023"	✓			
	3.163	+0.005/-0.000	3.165"	✓			
	3.308	+0.005/-0.000	3.312"	✓			
	3.429	+0.005/-0.000	3.431"	✓			
	2.990	+0.005/-0.000	2.994"	✓			
	2.618	+0.005/-0.000	2.621"	✓			
	0.200	+/-0.010	0.206"	✓			
	R0.063	+/-0.010	R0.063"	✓			
	R0.500	+/-0.010	R0.500"	✓			
	4.971	+/-0.001	4.977"	✓			
SIDE B	2.684	+0.005/-0.000	2.689"	✓			
	2.748	+0.005/-0.000	2.753"	✓			
	2.884	+0.005/-0.000	2.888"	✓			
	3.019	+0.005/-0.000	3.023"	✓			
	3.163	+0.005/-0.000	3.165"	✓			
	3.308	+0.005/-0.000	3.312"	✓			
	3.429	+0.005/-0.000	3.432"	✓			
	2.990	+0.005/-0.000	2.994"	✓			
	2.618	+0.005/-0.000	2.621"	✓			
	0.200	+/-0.010	0.199"	✓			
	R0.063	+/-0.010	R0.063	✓			
	R0.500	+/-0.010	R0.500"	✓			
	4.971	+/-0.001	4.972"	✓			
	124.09	+/-0.020	124.1	✓			

Measured by: J.L / J.F.	Audited by:	Prototype Approval:	N/A
Date: 07/10/12	Date:	Date:	N/A

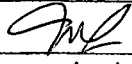

Rev	Date	Change	Revised by	Approved
A	04.06.16	New Issue (P/O D412-664-203)	KJ/JLM	
B	06.03.09	Dwg Rev updated	KJ/JLM	

DART AEROSPACE LTD	Work Order: 35055
Description: Crosstube Assembly HIGH AFTX-TURE 410	Part Number: D412664203
Inspection Dwg: D412-664-243 Rev: D	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	1	2	3	4			
	2.618	0.376	.410	.387	.361		
	9.315	0.224	.254	.227	.205		
	13.315	0.262	.307	.260	.217		
	21.707	0.327	.355	.328	.310		
	30.099	0.393	.402	.403	.396		
	39.050	0.466	.485	.472	.461		
	48.001	0.540	.553	.549	.539		
	55.546	0.600	.614	.614	.602		
SIDE B	0.374	.393	.390	.371			
	0.220	.230	.233	.224			
	0.256	.257	.263	.261			
	0.331	.320	.332	.340			
	0.398	.384	.403	.415			
	0.471	.456	.470	.488			
	0.554	.526	.542	.567			
	0.606	.602	.610	.610			

Measured by: 	Audited by: 	Prototype Approval:	N/A
Date: 07/10/15	Date: 07.10.16	Date:	N/A

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	

THICKNESS MEASUREMENTS

WALL PER
DWG

MEAN

AVERAGE
WALL DIF

ECCENTRIC

MIN MAX

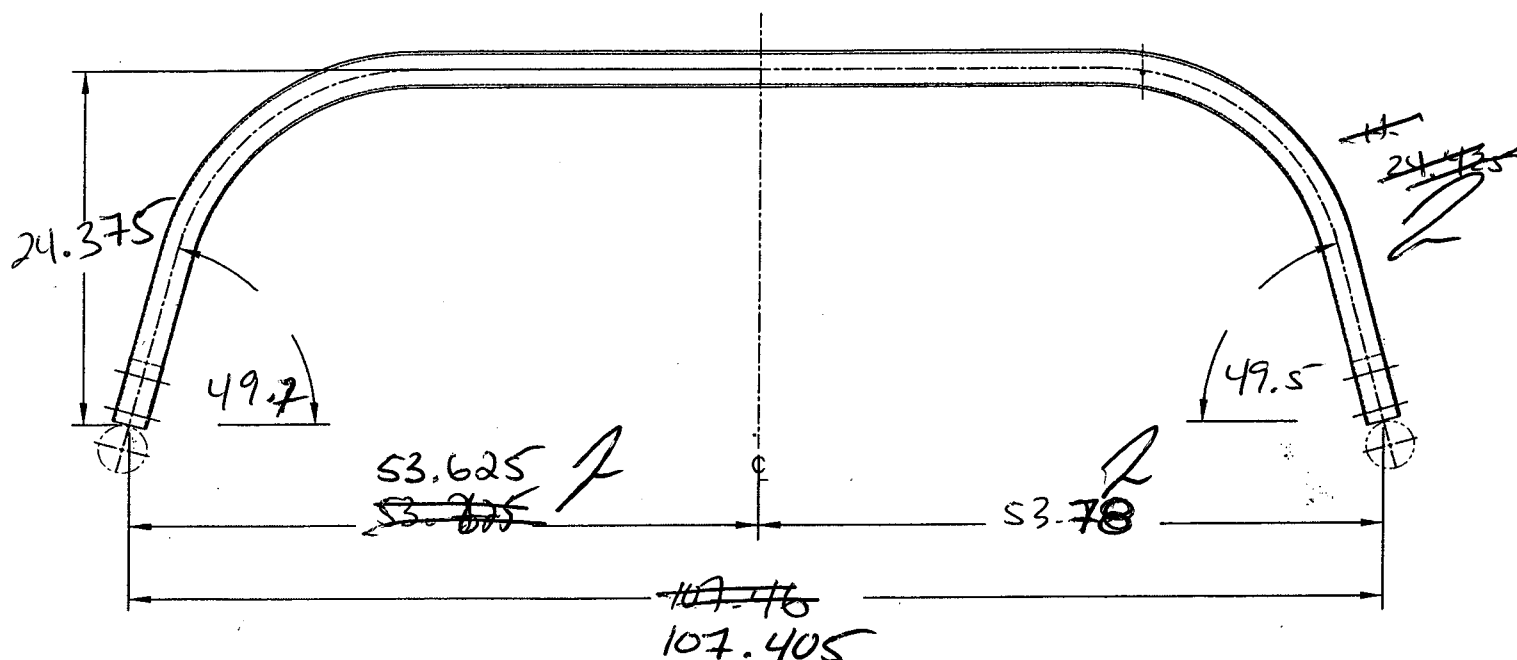
0.376	0.41	0.387	0.361	0.37	0.384	0.014	0.040	-0.009
0.224	0.254	0.227	0.205	0.217	0.228	0.011	0.037	-0.012
0.262	0.307	0.26	0.217	0.249	0.262	0.013	0.058	-0.032
0.327	0.355	0.328	0.31	0.317	0.330	0.013	0.038	-0.007
0.393	0.402	0.403	0.396	0.385	0.399	0.014	0.018	0.008
0.466	0.485	0.472	0.461	0.457	0.471	0.014	0.028	0.004
0.54	0.553	0.549	0.539	0.529	0.545	0.016	0.024	0.010
0.6	0.614	0.614	0.602	0.590	0.608	0.018	0.024	0.010
0.374	0.393	0.39	0.371	0.37	0.382	0.012	0.023	0.001
0.22	0.23	0.233	0.224	0.217	0.227	0.010	0.016	0.003
0.256	0.257	0.263	0.261	0.249	0.259	0.010	0.014	0.007
0.331	0.32	0.332	0.34	0.317	0.331	0.014	0.023	0.003
0.398	0.384	0.403	0.415	0.385	0.400	0.015	0.030	-0.001
0.471	0.456	0.47	0.488	0.457	0.471	0.014	0.031	-0.001
0.554	0.526	0.542	0.567	0.529	0.547	0.018	0.038	-0.003
0.606	0.602	0.61	0.61	0.590	0.607	0.017	0.020	0.012
							0.058	-0.032

Dim J6009 allows ± 0.063 WALL IN ECCENTRICITY
 ± 0.020 WALL MEAN

DIMS OK
 07.10.17

DART AEROSPACE LTD		Work Order:	35055
Description: Crosstube High Aft (412)		Part Number:	D412-664-203
Inspection Dwg: D412-664-243 Rev: D		Page 1 of 1	

Required Dimension	Min	Max
Height	24.24	24.50
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70



Comments
height is slightly uneven by .125, but is within tolerance.
Tube was rebent to make height even.

QC15 Inspection	
Date	07-10-24

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. D	KJ/JLM	



LIQUID PENETRANT TEST REPORT

P- 09852

PAGE 1 OF 1
TIME AM ☒ PM ☐

CLIENT Dart Aerospace DATE Oct 26/07
ATTENTION Linda Lacle ACUREN JOB NO. 188-07-C1174
ADDRESS 1270 Aberdeen St PO/WO No. 4916
Hawkesbury, ON WORK LOCATION Hawkesbury
ACCEPTANCE STD ASTM 417/OSI-CBS REV./DATE 2005
PROJECT Flourescent Liquid Pent. on 212/205 High FED X-TUBE + High AFT X-TUBE 412
ITEM(S) EXAMINED JOB# 33540 Part# D412664203 + JOB# 33539 + JOB# 35055 + JOB# 35056
+ JOB# 35106 Also - JOB# 34928 Part# - D212664101

JOB DESCRIPTION PROCEDURE NO. LT-002 REV./DATE TECHNIQUE NO. LT-TECH#2 REV./DATE
PART NO. D412664203 / D212664101 MATERIAL Alodined Alum THICKNESS
SCOPE Wet Flourescent Liquid Penetrant Inspection. 100% external surface.

TEST DETAILS

METHOD ☒ FLUORESCENT ☐ VISIBLE ☒ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED
FAMILY BRAND MagnaFlux BLACK LIGHT S/N 8163 ☐ OUTPUT > 1000 μ W/cm² ☐ AMBIENT < 2 fc
PENETRANT ZL-67 MINIMUM DWELL TIME 10-15 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE
PENETRANT REMOVER H2O MINIMUM DRY TIME > 10 MIN. OTHER CAL DUE DATE - APR 17-08
DEVELOPER SKD 32 MINIMUM DWELL TIME 10 MIN. LIGHT METER S/N CAL DUE DATE
DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY

TEST SURFACE

SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☐ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE METAL
SURFACE TEMPERATURE ☐ < -4°C/ 20°F ☐ -4°C/ 20°F TO 10°C/ 50°F ☒ 10°C/ 50°F TO 52°C/ 125°F ☐ > 52°C/ 125°F

RESULTS- (☐ METRIC ☐ IMPERIAL)

ITEM	COMMENTS	ACCEPT	REJECT
	<u>All Parts inspected had several linear indications & scratching on surface. These areas were marked & identified with paint stick. Client was notified & going to removed any all indications & repolish. We will then be called back to re-examine @ a later specified date.</u>		
	<u>See NCB 244</u>		

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE Jason Murdoch DTR # 27455
TECHNICIAN (SIGNATURE): [Signature] SIGNATURE
NAME (PRINT): PAT PINAK REPORT REVIEWED BY:
CGSB LEVEL II SNT LEVEL II CGSB LEVEL II SNT LEVEL II
CGSB REG. No. 3387 CGSB REG. No. 3387

